

Summary of Day 1

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Climate Migration Modeling Workshop
5-6 December 2016
Paris, France

Notable Quotes

- Modeling for a number is not helpful. Modeling is a heuristic device. We develop a model based on theoretical understanding, and the theoretical understanding stems from empirical evidence.
- The climate system may be most predictable portion of the future system. Climate will set a base minimum of impacts on the human system.
- Regarding mass migration in recent history (e.g., Syria): Does it matter to the policy maker if *climate* is driving crisis migration? In the absence of any CC might have had the same level of flows, so what matters is the net interaction of *all* causal forces.
- Yet for the future, to improve resilience and *in situ* adaptation, it would be useful to know the potential climate contribution.
- People are moving into areas that are going to be impacted. We need to emphasize vulnerability as an outcome. Drivers of migration are multiple. Yet those who migrate are moving *into* harm's way. We should project future vulnerability.
- We should bear in mind the ethics of the issues we're working on, and how our modeling may affect migration control.

Important Questions

- What do policy makers who want to make the world a better place need to know that they currently do not know? What information can we provide them?
- Operational use: If you put projections in front of people who are responsible for programs, will they know how to use them? Will they be dismissed as irrelevant or overly complicated, with all their embedded uncertainty?

Session 1. Data Sources

- Abel: Despite perceptions, the actual proportion of foreign born may be going down. Big flows from Latin America to North America and from South Asia to West Asia are slowing or reversing in some cases.
- Nunes: Models can help improve data collection.
- Wrathall: People migrate when the storms arrive. Migration in anticipation of a cyclone was the same as normal migration in the monsoon season.
- Sorchetti: CDRs and IPUMs are important sources of migration data.
- Adamo: There are important regional migration data bases in Latin America and Africa, as well as the integrated DHS.
- Abel: High temp as a driver of migration? Findings may suffer from the modifiable areal unit problem (MAUP).
- Need to get data on climate that are comparable at same spatial and temporal scales to the migration data. Need to select climate variables carefully.
- People are responding to unusual conditions. Need the long-term baseline conditions.
- Can we use the analogy of climate variability to understand the future climate? Or will future conditions reflect fundamentally different states.

Session 2. Climate Impacts

- Seager: Variability + gradual change = exceed adaptive capacity. Unprecedented events. The multimodel approach will reduce your variability. Don't average realizations – do the individual model runs. Need to work out where and what the vulnerability is – water resources, water resources, government assistance will vary from place to place.
- Oppenheimer: Estimates of SLR are very bad. Need a good model for ice sheet dynamics. Projections: They are getting to be higher as they become more refined. But for planning the uncertainty is difficult. Last time there was a 2°C rise in earth's temp, SL was 5-10 m higher. But don't know how long it took for that to happen. Flood frequency multipliers. Storm surge. Push water farther inland.
- Wada: Higher drought occurrence is projected in the Mediterranean, Brazil, and Australia. Dry areas getting drier. Ground water use: Abstractions in the Ganges basin are 54x the rates of recharge.
- Schewe: ISIMIP has water, ag, biomes, infrastructure, health/malaria, marine, permafrost, energy, biodiversity, + some regional models. Difference between 1.5 and 2°C for impacts. Impacts scale nonlinearly with temp.
- Discussion: Are the questions we're asking relevant to policy makers? What are conditions under which long term planning are carried out, and where does it happen? Lag between perception of change and action. Look at plausible places where you would see large increase in population owing to CC migration, and identify what to do. Look at places, rather than the world.

Session 3. Modeling

- Kniveton: You get emergent behavior. Sudden changes in behavior. HHs or individuals as agents. Theory of planned behavior. Attitude towards migration, acceptability, and ability to do it. Test a theory. Not like projections. Under which conditions will something appear? Test theories of how people react to CC.
- Nunes: In Nigeria, internal migration does not decrease with distance. Random Walk models: Characterize uncertainty. What emerges out of that?
- Milano: IDMC produces an annual map of new displacements due to conflict, violence and disasters. To understand internal displacement as a system, need a lot of data. Use GAR, Landscan, building information, and consider # houses destroyed as a proxy for displacement. Look at return period. Displacement #s based on intensity of the event.
- Jiang: Community demographic model: Raw data from UN global migration database. Historic census data on stocks by age and gender.
- Jones: NCAR community demographic model downscaled model. Gravity-based downscaling model. Pop agglomeration is a proxy for socioeconomic attractiveness. Incorporate CC impacts by affecting relative attractiveness.
- Discussion: Pop potentials use in ISIMIP. Focus on push in the past. The pull factors are more important. More direct in terms of the rationale. What are we going to do about the push factors? How do we include antecedent migration rates? Migration networks, and their importance. History that affects the flows. Some questions are better suited to different types of modeling. ABM, stochastic models, etc.